REMARKS

This is a full and timely response to the outstanding FINAL Office Action mailed July 21, 2009. Claims 1-3, 5-7, 9, 12, 14, 15, 23, 25, and 26 remain pending. In this response, claims 1-3, 9, 12, 15, and 23 are amended. Claims 4, 10, 11, 16-18, 24, 28, and 29 are canceled without waiver, prejudice, or disclaimer. Applicants reserve the right to present these canceled claims, or variants thereof, in continuing applications. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

Summary of Telephone Interview

Applicants wish to thank Examiner Good-Johnson for time spent with Applicants' representative, Thomas Hildebrandt, Reg. No. 59,303, during a telephone interview conducted on September 30, 2009, regarding the above-identified Office Action. During the interview, potential amendments to claim 1 were discussed. The Examiner agreed that amendments embodying the subject matter discussed would be sufficient to overcome the rejections indicated by the Office Action. However, the Examiner noted that a further search of the prior art would be necessary.

Claim Rejections under 35 U.S.C. § 102(e)

Claims 1-7, 9-12, 15-18, 23-26, and 28-29 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by *Yasui et al.* (US 6,271,848, hereinafter *Yasui*). Applicants have canceled claims 4, 10, 11, 16-18, 24, and 28-29 without waiver, prejudice, or disclaimer, thereby rendering the rejection of these claims moot.

Regarding the remaining claims, Applicants respectfully request that the rejection be withdrawn for the following reasons. A proper rejection of a claim under 35 U.S.C. § 102 requires that a single prior art reference disclose each element of the claim. *See, e.g., W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983).

To begin, claim 1, as amended, recites:

> 1. A method for rendering a graphic primitive in a graphics system, the graphic primitive having a plurality of sides that define the edge of the primitive, the method comprising:
>
> receiving, in the graphics system, a signal from an interface, the signal comprising data about a plurality of vertices of the graphic primitive;
>
> selecting, in the graphics system, an interior point within the graphic primitive;
>
> identifying, in the graphics system, a first side point on a first one of the sides and a second side point on a second one of the sides, the first side point and the second side point being points of intersection with the edge of the graphic primitive of a line segment intersecting the interior point, the first side point and the second side point each having a shared first channel value in common with the interior point;
>
> calculating, in the graphics system, a first ratio for the first side point according to the shared first channel value and a first channel value of each of the vertices of the first one of the sides;
>
> determining, in the graphics system, a plurality of remaining channel values for the first side point based on the first ratio;
>
> calculating, in the graphics system, a second ratio for the second side point according to the shared first channel value and a first channel value of each of the vertices of the second one of the sides;
>
> determining, in the graphics system, a plurality of remaining channel values for the second side point based on the second ratio;
>
> storing, in the graphics system, the plurality of channel values determined for the first side point and the second side point; and
>
> ***determining, in the graphics system, a plurality of remaining channel values for each of a plurality of interior points intersected by the line segment and having the shared first channel value, each of the remaining channel values for a respective one of the interior points being determined according to a corresponding stored channel value of the first side point and a corresponding stored channel value of the second side point***.

(*Emphasis added*). Applicants respectfully submit that *Yasui* fails to disclose, teach, or suggest at least the claim features emphasized above.

In this regard, *Yasui* states:

> In FIG. 5, the aforementioned interpolation processes are carried out by an edge interpolator 60 and raster interpolator 62. Here, we shall consider the rendering process of polygon ID 0 in a screen 80, as illustrated in FIG. 6, and we shall look at the processing for a pixel at point c in the polygon. In order to determine the Z value of the pixel corresponding to point c, an internal division ratio t1 at point a on edge 00-01, and an internal division ratio t2 at point b on edge 00-02 are determined. These are edge interpolation calculations. A further internal division ratio t3 is determined at point c which lies between points a and b. This is a raster interpolation calculation. Thereupon, the Z value at point c is derived by a linear interpolation method from the Z values at each of the vertices, for example.

(Col. 7, lines 33-46).

Applicants submit that the calculations for the single "point c" described above in *Yasui* fail to disclose, teach, or suggest "determining… a plurality of remaining channel values for each of ***a plurality of interior points intersected by the line segment*** and having the shared first channel value, each of the remaining channel values for a respective one of the interior points being ***determined according to a corresponding stored channel value of the first side point and a corresponding stored channel value of the second side point***" as recited in amended claim 1. (*Emphasis added*). *Yasui* actually teaches away from this feature by suggesting that all of the calculations (including ratio calculations) need to be performed for each point c ("In order to determine the Z value of the pixel corresponding to point c").

Applicants submit that this amendment is fully supported by the specification, for example, at pages 12-13 (Equations 1-3; "It can be seen that for successive points on the same horizontal span, only the third interpolation need be performed.").

Further, Applicants submit that amended claim 1 is allowable over the earlier-cited *Foley* reference. *Foley* appears to disclose a z-buffer algorithm and discusses "interpolating the z-coordinates along pairs of edges and then across each scan line" (p. 670), but this does not appear to disclose determining ***remaining channel values*** according to ***stored*** channel values of the side points.

For at least these reasons, Applicants respectfully request that the rejection of claim 1 be withdrawn. Insofar as claims 2-3 and 5-7 depend from claim 1, claims 2-3 and 5-7 allowable as a matter of law because these dependent claims contain all features/elements/steps of their independent claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

Next, claim 9, as amended, recites:

> 9. A method of rendering a graphic primitive in a graphics system, the primitive including a plurality of edges, the method comprising:
> receiving, in the graphics system, a signal from an interface, the signal comprising data about the plurality of vertices of the primitive;
> determining, in the graphics system, a first ratio for a first point on a first edge of the graphic primitive, the first ratio determined according to a shared first channel value of the first point and a first channel value of each of the vertices of the first edge;
> deriving, in the graphics system, a plurality of additional channel values for the first point based on the first ratio;
> determining, in the graphics system, a second ratio for a second point on a second edge of the graphic primitive, the second ratio determined according to the shared first channel value and a first channel value of each of the vertices of the second edge;
> deriving, in the graphics system, a plurality of additional channel values for the second point based on the second ratio;
> storing, in the graphics system, the channel values for the first point and the channel values of the second point;
> ***determining, in the graphics system, a third ratio for each of a plurality of interior points having the shared first channel value based on the stored channel values for the first point and the stored channel values for the second point; and***

determining, in the graphics system, a plurality of additional channel values for the interior points based on the third ratios.

(*Emphasis added*). Applicants respectfully submit that *Yasui* fails to disclose, teach, or suggest at least the claim features emphasized above.

Regarding claim 9, the Office Action (p. 5) states that "it is rejected based upon similar rational as above claim 1." Therefore, Applicants reassert the arguments presented in connection with amended claim 1 to the extent that they apply to amended claim 9. In addition, the Office Action alleges that *Yasui* "further discloses calculating a third ratio, t3" at col. 7, lines 41-43. The cited portion of *Yasui* states: "These are edge interpolation calculations. A further internal division ratio t3 is determined at point c which lies between points a and b. This is a raster interpolation calculation." (Col. 7, lines 41-43). However, *Yasui* fails to show or suggest that t3 is determined "for each of ***a plurality of interior points*** having the shared first channel value ***based on the stored channel values for the first point and the stored channel values for the second points***" as recited in amended claim 9.

For at least these reasons, Applicants respectfully submit that claim 9 is allowable over *Yasui* and request that the rejection be withdrawn. Insofar as claim 12 depends from claim 9, claim 12 is allowable as a matter of law because this dependent claim contains all features/elements/steps of its independent claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

Next, claim 15, as amended, recites:

> 15. A system for rendering a graphic primitive in a graphics system, the graphic primitive having a plurality of sides, the system comprising:

a channel value input device configured to determine a channel value for each of a plurality of vertices of the graphic primitive using data received from an interface;

a point specifier, coupled to the channel value input device, configured to select an interior point within the graphic primitive and provide a shared first channel value for the interior point; and

an interpolation engine coupled to the point specifier and to the channel value input device, configured to determine a first ratio for a first side point according to the shared first channel value provided by the point specifier and a first channel value of each of the vertices of a first one of the sides provided by the channel value input device, determine a second ratio for a second side point according to the shared first channel value provided by the point specifier and a first channel value of each of the vertices of a second one of the sides provided by the channel value input device, determine an interpolated channel value for the first side point using the first ratio and data received from the interface, determine an interpolated channel value for the second side point using the second ratio and data received from the interface, ***determine a third ratio according to the shared first channel value provided by the point specifier and the first channel values of the first and second side points and further configured to determine a channel value at each of a plurality of interior points having the shared first channel value provided by the point specifier using the third ratio and interpolation of the channel values for each of the first and second side points***.

(*Emphasis added*). Applicants respectfully submit that *Yasui* fails to disclose, teach, or suggest at least the claim features emphasized above.

Regarding claim 15, the Office Action (p. 6) states that "it is rejected based upon similar rational as above claim 1." Therefore, Applicants reassert the arguments presented in connection with claim 1 to the extent that they apply to claim 15. In addition, the Office Action (p. 6) alleges that the attribute classifying section of *Yasui* corresponds to a point specifier. Applicants respectfully disagree. *Yasui* states:

> The characteristic feature of this embodiment lies in the fact that an attribute classifying section 16 is provided in the geometry converting section 14, or at the output thereof, and this classifies the polygon data generated by the geometry converting section 14 according to the polygon attribute data, and then stores it in the polygon buffer memory 18. When is stored in the polygon buffer memory 18, data is classified such that

polygon data having the same attribute data can be extracted. The specific composition of this polygon buffer memory 18 is described below.

(Col. 4, line 60 – col. 5, line 2). Although the Examiner interprets the attribute classifying section as a point specifier, no where does *Yasui* show or suggest that the attribute specifying section is "configured to select an interior point within the graphic primitive and provide a shared first channel value for the interior point" as recited in amended claim 15.

Additionally, Applicants respectfully submit that *Yasui* fails to disclose, teach, or suggest "determine a third ratio according to the shared first channel value provided by the point specifier and the first channel values of the first and second side points and further configured to determine a channel value at each of a plurality of interior points having the shared first channel value provided by the point specifier using the third ratio and interpolation of the channel values for each of the first and second side points.

For at least these reasons, Applicants respectfully submit that amended claim 15 is allowable over *Yasui* and request that the rejection be withdrawn.

Claim 23, as amended, recites:

> 23. A method of generating interpolated values for use in rendering a graphic primitive in a graphics system, the method comprising:
> receiving, in the graphics system, from an interface an independent variable X representing the physical portion of a point within the graphic primitive;
> receiving, in the graphics system, vertex values X_0, X_1 of a primitive edge having the point within the graphic primitive with the physical position represented by the independent variable X;
> receiving, in the graphics system, depth values Z_0, Z_1 associated with the vertex values X_0, X_1;
> calculating, in the graphics system, a ratio value dependent upon the independent variable at the point X, vertex values X_0, X_1, and depth values Z_0, Z_1; and

storing, in the graphics system, the ratio value;

receiving, in the graphics system, color values associated with the vertex values X_0, X_1; and

calculating, in the graphics system, interpolated color values for the point based upon the ratio value and the color values associated with the vertex values of X_0, X_1.

(*Emphasis added*). Applicants respectfully submit that *Yasui* fails to disclose, teach, or suggest at least the claim features emphasized above.

Regarding claim 23, the Office Action (p. 7) states that it is "rejected based upon similar rational as above." Therefore, Applicants reassert the arguments presented above to the extent that they apply to claim 23. Additionally, the Office Action broadly alleges that "calculating ratio values" is disclosed in col. 7 of *Yasui*. However, *Yasui* fails to disclose, teach, or suggest "***calculating, in the graphics system, interpolated color values for the point based upon the ratio value and the color values associated with the vertex values of X_0, X_1*** " as recited in claim 23. At most, *Yasui* discusses using ratios in conjunction with "texture co-ordinates values, normal vectors and alpha values" (col. 7, lines 62-63), but these are not "color values." As discussed above, *Yasui* does not disclose, teach, or suggest precisely how internal division ratios t1, t2, and t3 are determined. Moreover, nothing in *Yasui* shows or suggests that any of the ratios would be dependent on the color values recited in claim 23.

For at least these reasons, Applicants respectfully submit that claim 23 is allowable over *Yasui* and request that the rejection be withdrawn. Insofar as claims 25-26 depend from claim 23, claims 25-26 are allowable as a matter of law because these dependent claims contain all features/elements/steps of their independent claim. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

Claim 14 stands rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by *Nally et al.* (US 5,598,525, hereinafter *Nally*). Applicants respectfully traverse the rejection.

In this regard, claim 14 recites:

> 14. A system for rendering a graphic primitive, the graphic primitive including a plurality of vertices and edges, the system comprising:
> a plurality of agents configured to receive information from an interface related to the plurality of vertices, a point within the graphic primitive, and generate output signals;
> an arbiter coupled to the plurality of agents and configured to receive the output signals and to generate request signals;
> ***an interpolation engine configured to receive the request signals and generate an output ratio signal dependent on at least some of the output signals from the plurality of agents***; and
> a router coupled to the interpolation engine and configured to transmit the output ratio signal to an input of at least one of the plurality of agents.

(*Emphasis added*). Applicants respectfully submit that *Nally* fails to disclose at least the claim features emphasized above.

To begin, in Applicants' last response, Applicants objected to the manner in which claim 14 was rejected. Applicants note that further explanation of the rejection has not been provided by the present Office Action.

Regarding the above-emphasized features, the Office Action (p. 8) broadly alleges that they are disclosed by the video backend pipeline 204. Again, Applicants note that the Office Action has provided no explanation as to why the Examiner believes that the video backend pipeline 204 corresponds to all the limitations of "an interpolation engine configured to receive the request signals and generate an output ratio signal dependent on at least some of the output signals from the plurality of agents" as recited in claim 14. In particular, Applicants have not found any discussion in *Nally*

corresponding to "generat[ing] an output ratio signal." Accordingly, Applicants respectfully submit that claim 14 is allowable over *Nally* and request that the rejection be withdrawn.

It is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

A credit card authorization is provided to cover the fee associated with the accompanying RCE. No additional fee is believed to be due in connection with this submission. If, however, any fee is deemed to be payable, you are hereby authorized to charge any such fee to Deposit Account No. 20-0778.

Respectfully submitted,

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